Amendments to the Claims

Please amend Claims 40, 65, 69, 70, 74, 75, 77, 79, 80, 82, 84, 85, 87 and 88. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1.-39. (Canceled)

40. (Currently amended) ~~A patient-specific~~An apparatus for use in tissue engineering, wherein said apparatus comprises a scaffold ~~structure corresponding to a digital model of the patient-specific apparatus~~, said scaffold structure comprising:

a plurality of horizontal layers of scaffold material, wherein each horizontal layer is sequentially adhered to the adjacent layer,

wherein each horizontal layer comprises a plurality of raster roads of melt extrusion filament material selected from polycaprolactone (PCL), a polycaprolactone/hydroxyapatite (PCL/HA) composite, or a polycaprolactone/tricalcium phosphate (PCL/TCP) composite with a fill gap between each raster road, thereby providing a horizontal channel between each raster road,

wherein the ratio of the raster road width to the channel width is constant in each layer,

~~and~~ wherein the each sequential layer is deposited at different raster angles in the z-axis view,

and wherein deposition of sequential layers at different raster angles produces a consistent pore size in the scaffold,

thereby providing a scaffold structure having interconnected channels, said scaffold structure is a ~~patient-specific~~ scaffold for use in tissue engineering.

41.-64. (Canceled)

65. (Currently amended) ~~A patient-specific~~An apparatus for use in tissue engineering, wherein said apparatus ~~consists of~~comprises a scaffold structure consisting of:

a plurality of horizontal layers of scaffold material, wherein each horizontal layer is sequentially adhered to the adjacent layer,

wherein each horizontal layer comprises a plurality of raster roads of melt extrusion filament material selected from polycaprolactone (PCL), a polycaprolactone/hydroxyapatite (PCL/HA) composite, or a polycaprolactone/tricalcium phosphate (PCL/TCP) composite with a fill gap between each raster road, thereby providing a horizontal channel between each raster road,

wherein the ratio of the raster road width to the channel width is constant in each layer,

~~and~~ wherein the each sequential layer is deposited at different raster angles in the z-axis view,

and wherein deposition of sequential layers at different raster angles produces a consistent pore size in the scaffold,

thereby providing a scaffold structure having interconnected channels, said scaffold structure is a ~~patient-specific~~ scaffold for use in tissue engineering.

66. (Canceled)

67. (Previously Presented) The apparatus of Claim 40, wherein the sequential layers are deposited at raster angles of $0^{\circ}/60^{\circ}/120^{\circ}$ thereby forming a triangular pattern of scaffold material in the z-axis view.

68. (Previously Presented) The apparatus of Claim 40, wherein the sequential layers are deposited at raster angles of $0^{\circ}/72^{\circ}/144^{\circ}/36^{\circ}/108^{\circ}$ thereby forming a polygonal pattern of scaffold material in the z-axis view.

69. (Currently amended) The apparatus of Claim 40, wherein the ~~patient-specific~~ scaffold is 30% to 80% porous.

70. (Currently amended) The apparatus of Claim 40, wherein the ~~patient-specific~~ scaffold has a compression stiffness under ambient air conditions of 4 MPa to 77 MPa.

71. (Previously Presented) The apparatus of Claim 40, wherein the channel width is 250μm to 780 μm.

72. (Previously Presented) The apparatus of Claim 65, wherein the sequential layers are deposited at raster angles of 0°/60°/120° thereby forming a triangular pattern of scaffold material in the z-axis view.

73. (Previously Presented) The apparatus of Claim 65, wherein the sequential layers are deposited at raster angles of 0°/72°/144°/36°/108° thereby forming a polygonal pattern of scaffold material in the z-axis view.

74. (Currently amended) The apparatus of Claim 65, wherein the ~~patient-specific~~ scaffold is 30% to 80% porous.

75. (Currently amended) The apparatus of Claim 65, wherein the ~~patient-specific~~ scaffold has a compression stiffness under ambient air conditions of 4 MPa to 77 MPa.

76. (Previously Presented) The apparatus of Claim 65, wherein the channel width is 250μm to 780 μm.

77. (Currently amended) ~~A patient-specific~~An apparatus for use in tissue engineering, wherein said apparatus comprises a scaffold structure ~~corresponding to a digital model of the patient-specific apparatus~~, said scaffold structure comprising:

a plurality of horizontal layers of scaffold material, wherein each horizontal layer is sequentially adhered to the adjacent layer,

wherein each horizontal layer comprises a plurality of raster roads of melt extrusion filament material with a fill gap between each raster road, thereby providing a horizontal channel between each raster road,

wherein the ratio of the raster road width to the channel width is constant in each layer,

~~and~~ wherein the each sequential layer is deposited at raster angles of 0°/60°/120° to produce a triangular pattern of scaffold material in the z-axis view or

$0^{\circ}/72^{\circ}/144^{\circ}/36^{\circ}/108^{\circ}$ to produce a polygonal pattern of scaffold material in the z-axis view,

and wherein deposition of sequential layers at said raster angles produces a consistent pore size in the scaffold,

thereby providing a scaffold structure having interconnected channels, said scaffold structure is a ~~patient-specific~~ scaffold for use in tissue engineering.

78. (Previously Presented) The apparatus of Claim 77, wherein the melt extrusion filament material is selected from polycaprolactone (PCL), a polycaprolactone/hydroxyapatite (PCL/HA) composite, or a polycaprolactone/tricalcium phosphate (PCL/TCP) composite.

79. (Currently amended) The apparatus of Claim 77, wherein the ~~patient-specific~~ scaffold is 30% to 80% porous.

80. (Currently amended) The apparatus of Claim 77, wherein the ~~patient-specific~~ scaffold has a compression stiffness under ambient air conditions of 4 MPa to 77 MPa.

81. (Previously Presented) The apparatus of Claim 77, wherein the channel width is 250μm to 780 μm.

82. (Currently amended) ~~A patient-specific~~An apparatus for use in tissue engineering, wherein said apparatus ~~consists of~~comprises a scaffold structure consisting of:

a plurality of horizontal layers of scaffold material, wherein each horizontal layer is sequentially adhered to the adjacent layer,

wherein each horizontal layer comprises a plurality of raster roads of melt extrusion filament material with a fill gap between each raster road, thereby providing a horizontal channel between each raster road,

wherein the ratio of the raster road width to the channel width is constant in each layer,

~~and~~ wherein the each sequential layer is deposited at raster angles of $0^{\circ}/60^{\circ}/120^{\circ}$ to produce a triangular pattern of scaffold material in the z-axis view or

$0^{o}/72^{o}/144^{o}/36^{o}/108^{o}$ to produce a polygonal pattern of scaffold material in the z-axis view,

and wherein deposition of sequential layers at said raster angles produces a consistent pore size in the scaffold,

thereby providing a scaffold structure having interconnected channels, said scaffold structure is a ~~patient-specific~~ scaffold for use in tissue engineering.

83. (Previously Presented) The apparatus of Claim 82, wherein the melt extrusion filament material is selected from polycaprolactone (PCL), a polycaprolactone/hydroxyapatite (PCL/HA) composite, or a polycaprolactone/tricalcium phosphate (PCL/TCP) composite.

84. (Currently amended) The apparatus of Claim 82, wherein the ~~patient-specific~~ scaffold is 30% to 80% porous.

85. (Currently amended) The apparatus of Claim 82, wherein the ~~patient-specific~~ scaffold has a compression stiffness under ambient air conditions of 4 MPa to 77 MPa.

86. (Previously Presented) The apparatus of Claim 82, wherein the channel width is 250μm to 780 μm.

87. (Currently amended) An apparatus for use in tissue engineering, said apparatus comprising a ~~patient-specific~~ scaffold structure having interconnected channels, said scaffold structure prepared by a method of fused deposition modeling (FDM) ~~based on a digital model of the patient-specific scaffold~~, said method comprising:

forming a plurality of horizontal layers of a scaffold ~~based on the digital model of a patient-specific scaffold~~ by depositing sequential layers of scaffold material under conditions sufficient to adhere each sequential layer to the adjacent layer,

wherein each layer is formed by depositing raster roads of melt extrusion filament material selected from polycaprolactone (PCL), a polycaprolactone/hydroxyapatite (PCL/HA) composite, or a polycaprolactone/tricalcium phosphate (PCL/TCP) composite,

wherein a fill gap between each raster road provides a horizontal channel, wherein the ratio of the raster road width to the channel width is constant in each layer,

~~and~~ wherein the each sequential layer is deposited at a different raster angle,

and wherein deposition of sequential layers at different raster angles produces a consistent pore size in the scaffold,

thereby producing a ~~patient-specific~~ scaffold having interconnected channels.

88. (Currently amended) An apparatus for use in tissue engineering, said apparatus comprising a ~~patient-specific~~ scaffold structure having interconnected channels, said scaffold structure prepared by a method of fused deposition modeling (FDM) ~~based on a digital model of the patient-specific scaffold~~, said method comprising:

forming a plurality of horizontal layers of a scaffold ~~based on the digital model of a patient-specific scaffold~~ by depositing sequential layers of scaffold material under conditions sufficient to adhere each sequential layer to the adjacent layer,

wherein each layer is formed by depositing raster roads of melt extrusion filament material,

wherein a fill gap between each raster road provides a horizontal channel,

wherein the ratio of the raster road width to the channel width is constant in each layer,

~~and~~ wherein the each sequential layer is deposited at raster angles of $0^{o}/60^{o}/120^{o}$ to produce a triangular pattern of scaffold material in the z-axis view or $0^{o}/72^{o}/144^{o}/36^{o}/108^{o}$ to produce a polygonal pattern of scaffold material in the z-axis view,

and wherein deposition of sequential layers at said raster angles produces a consistent pore size in the scaffold,

thereby producing a ~~patient-specific~~ scaffold having interconnected channels.